

**UNITED STATES DISTRICT COURT  
EASTERN DISTRICT OF TEXAS  
MARSHALL DIVISION**

IARNACH TECHNOLOGIES LTD.,

*Plaintiff,*

v.

VERIZON BUSINESS NETWORK  
SERVICES LLC, VERIZON ENTERPRISE  
SOLUTIONS, LLC, CELLCO  
PARTNERSHIP D/B/A VERIZON  
WIRELESS, INC., VERIZON DATA  
SERVICES LLC, VERIZON BUSINESS  
GLOBAL LLC, AND VERIZON SERVICES  
CORP.,

*Defendants,*

Civil Action No. 2:23-cv-00631-JRG

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**VERIZON'S RESPONSIVE CLAIM CONSTRUCTION BRIEF**

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<b>No.</b>	<b>Short Name</b>	<b>Reference</b>
A	Brand-Pearce Dec.	Declaration of Dr. Maite Brandt-Pearce on behalf of Defendants Regarding Claim Construction, dated December 20, 2024
B	'359 Patent	U.S. Patent No. 8,934,359
C	GPON	ITU-T GPON Recommendation, G.984.3 (Mar. 2008)
D	'171 Patent	U.S. Patent No. 7,600,171
E	Dictionary 1	Gilbert Held, <i>Dictionary of Communications Technology</i> (3d ed. 1998)
F	Paper 1	M. Brandt-Pearce <i>et al.</i> , <i>QoS-aware Wavelength Assignment with BER and Latency Guarantees for Cross talk Limited Networks</i> , IEEE Explore (July 2007)
G	Paper 2	M. Brandt-Pearce and X. Wang, <i>Dynamic Grooming and RWA in Translucent Optical Networks Using a Time-Slotted ILP</i> , Globecom 2012 – Optical Networks and Systems Symposium (2012)
H	Dictionary 2	<i>The American Heritage College Dictionary</i> (3d ed. 1993)
I	Dictionary 3	<i>Webster's II New College Dictionary</i> (1999)
J	Dictionary 4	<i>The American Heritage Dictionary</i> (1991)
K	Dictionary 5	<i>Merriam-Webster's Collegiate Dictionary</i> (11th ed. 2003)

## I. INTRODUCTION

On February 10, 2025, Plaintiff Iarnach Technologies Ltd. (“Plaintiff”) and Defendants Verizon Business Network Services LLC, Verizon Enterprise Solutions, LLC, Cellco Partnership d/b/a Verizon Wireless, Inc., Verizon Data Services LLC, Verizon Business Global LLC, and Verizon Services Corp. (“Defendants”) filed a joint stipulation dismissing Plaintiff’s claims for four of the five originally Asserted Patents in this matter. Accordingly, only U.S. Patent No. 8,934,359 (the “’359 Patent”) remains at issue in this case. There are three disputed terms from the ’359 Patent. Defendants’ construction and indefiniteness positions, unlike Plaintiff’s, are consistent with the intrinsic and extrinsic record, and the understanding of a POSITA.

For the “waiting state” term, which is not a term of art, Plaintiff asserts a construction that ignores the applicant’s clear lexicography. For example, the applicant repeatedly, and unequivocally, defined “waiting state” in the specification, stating: “waiting state (i.e., O2 state).”

For the term “different levels of link quality,” Plaintiff ignores the inherent ambiguity in “link” quality—there is no way to determine “link” quality generally because of the bidirectional nature of PON systems (only the *uplink* quality or the *downlink* quality can be determined). Plaintiff’s “plain and ordinary” construction, therefore, fails to inform a POSITA with reasonable certainty whether “different levels of link quality” refers to different levels of (1) *uplink* quality, (2) *downlink* quality, (3) either, or (4) both. Each of the four possible interpretations has a different scope, and the intrinsic and extrinsic evidence fails to provide guidance on this ambiguity.

For the “determining” phrase, Plaintiff’s construction ignores that the claim purports to cover an impossible scenario where the ONU determines suitable parameters for itself from one parameter value or set. But the ONU cannot make a *determination* from a *single* parameter value or set because the ONU is either forced to determine multiple parameters from just a single

parameter value (a practical impossibility), or the ONU is fed the parameter set by the OLT, in which case the ONU cannot possibly “determine” which set to use.

## II. BACKGROUND OF THE TECHNOLOGY

For an overview of the relevant technology, Defendants direct the Court to the expert declaration of Dr. Brandt-Pearce and associated exhibits, attached hereto as Exhibit A, and Defendants’ Technology Tutorial submitted on January 28, 2025.

## III. ’359 PATENT DISPUTED TERMS

### A. “waiting state” (Claim 1)

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
No construction necessary; plain and ordinary meaning	“O2 state”

#### i. *The Patentee Acted as a Lexicographer.*

The patentee acted as a lexicographer by defining “waiting state,” which is not a term of art, to mean “O2 state.” The specification twice uses “i.e.” to equate “waiting state” with “O2” state, which a POSITA would understand to be definitional. Ex. A (Brandt-Pearce Dec.), ¶¶ 83-89; *Edwards Lifesciences LLC v. Cook Inc.*, 582 F.3d 1322, 1334 (Fed. Cir. 2009) (“the specification’s use of ‘i.e.’ signals an intent to define the word to which it refers . . . .”); *Tidel Eng’g L.P. v. Fire King Int’l, Inc.*, 613 F. Supp. 2d 823, 829 (E.D. Tex. 2009) (noting that the “Federal Circuit has found that ‘i.e.’ defined the meaning of a term” and finding patentee’s argument that “i.e.” is exemplary was “contrary to the literal meaning of this abbreviation for the Latin *id est*, meaning ‘that is.’”) (citing *Abbot Labs. v. Novopharm Ltd.*, 323 F.3d 1324, 1330 (Fed.Cir. 2003)).

In addition to the express definition of “waiting state” provided in the specification, Figure 1 equates the “waiting state” with the “O2” state, as shown below:

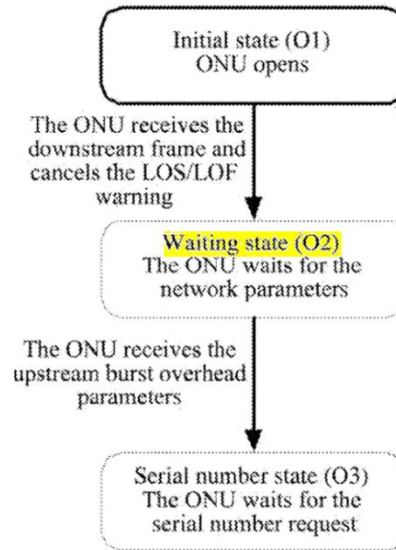


FIG. 1

The specification uses “waiting state” fourteen times. *See* Ex. B (’359 Patent) at 1:41-50; ’359 Patent at 2:34-45, 5:1-15, 6:26-32, 7:47-63, 18:39-53, 19:43-58, and 21:3-9. But only one definition is ever provided—“i.e., O2 state”—and that definition is provided multiple times. *Tidel*, 613 F. Supp. 2d at 829 (“Only when the intrinsic evidence supports an alternate definition of the term preceding ‘i.e.’ has the Federal Circuit found that the definition following ‘i.e.’ does not control.”) (citing *Pfizer, Inc. v. Teva Pharms., USA, Inc.*, 429 F.3d 1364, 1373 (Fed. Cir. 2005)).

Moreover, the patentee uses “waiting state” and “O2 state” interchangeably throughout the specification and figures. *See, e.g.*, Ex. B (’359 Patent) at Figs. 3-9, 7:47-57, 9:35-38, 11:35-41, 12:63-13:3, 17:8-12; *GK Techs. Inc. v. Eaton Elec. Inc.*, No. 6:07-cv-16, 2008 U.S. Dist. LEXIS 26232, at \*16 (E.D. Tex. Apr. 1, 2008) (“When terms are used interchangeably, they may be given the same meaning.”) (citing *Tehrani v. Hamilton Med. Inc.*, 331 F.3d 1355, 1361 (Fed. Cir. 2003)).



***ii. Plaintiff’s “Plain and Ordinary” Meaning of the Term is Not Supported by Intrinsic or Extrinsic Evidence.***

Plaintiff argues the plain and ordinary meaning of “waiting state” means just “a state where the ONU waits.” Dkt. 59 (Opn. Br.) at 6-7. However, this alleged plain meaning is absent from the specification. Thus, Plaintiff entirely supports its position through the testimony of its expert, Bruce Schofield, and “extrinsic evidence” in the form of dictionary definitions for a different term. Dkt. 59 (Opn. Br.) at 7.

In supporting Plaintiff’s “plain meaning,” Mr. Schofield relies on disclosures that simply do not exist. As illustrated below, the quotations in red are not found *anywhere* in the ’359 Patent.

Schofield Declaration at ¶22	’359 Patent at 2:46-49
The specification further describes the “waiting state” as a state where the ONU is “ <b>unable to proceed</b> ” to, for example, a “serial number state” until “the ONU receiv[es] the parameter value(s) or the identification(s) of the upstream burst overhead parameter set(s).” ’359 Patent at 2:46-49. Likewise, the described “waiting state” is an ONU waiting “ <b>for a response from</b> ” an “ <b>input-output device</b> ” (the OLT) before transmitting. <i>Id.</i>	After the step of the ONU receiving the parameter value(s) or the identification(s) of the upstream burst overhead parameter set(s), the method further comprises: the ONU entering into a serial number state;

Moreover, Plaintiff cites dictionary definitions that do not define the term “waiting state” that is used in the claims. The cited dictionaries have limited relevance, at best, to the technology at issue and do not focus on optical networks, or even telecommunications, and instead relate to computing or electrical engineering.

Plaintiff argues that Defendants’ construction does not provide clarity. However, Defendants’ construction precisely and clearly states that “waiting state” covers the “O2 state.”. On the other hand, Plaintiff’s construction of “waiting state”—circularly, “a state where the ONU waits”—is ambiguous and reflects only Plaintiff’s attempt to broaden its patent so that it can attempt to read it on virtually any state.

*iii. The Use of “i.e.” is Not Exemplary.*

At no point does the ’359 Patent “state that ‘i.e.’ should be read to provide mere examples. Instead, the patentee used ‘i.e.’ here to ‘clearly express’ an intent to define the term [waiting state].” *LecTec Corp. v. Chattem, Inc.*, No. 5:08-CV-130 DF, 2010 U.S. Dist. LEXIS 146263, at \*18 (E.D. Tex. May 20, 2010). The use of “i.e.” here is not exemplary, and Plaintiff’s attempt to rewrite it as such runs afoul of the literal meaning of “i.e.” and Federal Circuit precedent, as this Court explains in *LecTec. Id.* at \*17-21 (the exception to the general rule does not apply when the specification “contains no other discussion of [the disputed term] that would expand its definition beyond what the patentee signaled with ‘i.e.’”).

Plaintiff also relies on *DealerTrack, Inc. v. Huber*, but this case similarly fails to show that “i.e.,” as used here, is exemplary. 674 F.3d 1315 (Fed. Cir. 2012). In *DealerTrack*, the Federal Circuit found that what followed the potential definition of a term following “i.e.” was **inconsistent** with other explanations of that term in the specification. *Id.* at 1324-26. The patent at issue there disclosed “routing, i.e., sequencing and timing” for one embodiment, but also disclosed routing as covering “sequencing, timing, or both” for other embodiments. *Id.* The Federal Circuit held that “internal consistency can only be achieved by reading ‘i.e.’ as exemplary.” *Id.* at 1326. As additional support, the court noted that the patentee used “i.e.” in other contexts in the specification to provide examples. *Id.* at 1326. Plaintiff latches on to this single sentence, but ignores its context, as well as the main holding. Notably, the ’359 Patent defines other states in the same way it defines the O2 state: the “initial state (i.e., O1 state)” and the “serial number state (i.e., O3 state).” Ex. B (’359 Patent) at 1:45-50, 7:29-31, 7:40-41, Fig. 1.

In sum, there are no alternative, let alone contradictory, examples of “waiting state” in the specification and, thus, “waiting state” is clearly defined as, and can only mean, “O2 state.”<sup>1</sup>

**B. “different levels of link quality” (Claim 1)**

Plaintiff’s Proposed Construction	Defendants’ Proposed Construction
No construction necessary; plain and ordinary meaning	Indefinite

The term “different levels of link quality,” as it appears in claim 1, creates a distinct problem: the indefiniteness issue arises because it is unclear whether “different levels of link quality” means (1) different levels of *uplink* quality, (2) different levels of *downlink* quality, (3) different levels of *uplink or downlink* quality, or (4) different levels of *uplink and downlink* quality. Nothing in the claim, or the intrinsic or extrinsic records, informs a POSITA, with reasonable certainty, of the scope of the invention. Ex. A (Brandt-Pearce Dec.) at ¶ 91. Each of these possible interpretations could apply, but there is no clear indication—nor any indication—of which one should apply, and each interpretation has a meaningfully different scope. Accordingly, while “a court can ascribe *some* meaning,” this does not solve the “indefiniteness problem if the claim language might mean several different things and no informed and confident choice is available among the contending definitions.” *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1371 (Fed. Cir. 2014) (internal citations omitted).

Tellingly, in its attempt to sidestep the ambiguity issue, Plaintiff argues the disputed term is not limited to any type or direction of link. Dkt. 59 (Opn. Br.) at 11 (“[N]othing in the language ‘different levels of link quality’ requires limiting ‘link quality’ to the quality of any specific type

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<sup>1</sup> PON ITU-T recommendations provide for express numbered states, among them the initial state (O1), the standby state (O2), the serial number state (O3), and the ranging state (O4). *See, e.g.*, Ex. C (GPON) at 65, 109-14. The ’359 Patent discusses these states in a way that mirrors what existed at the time in the GPON Recommendation, which it cites. Ex. B (’359 Patent) at 1:33-50, 7:40-41.

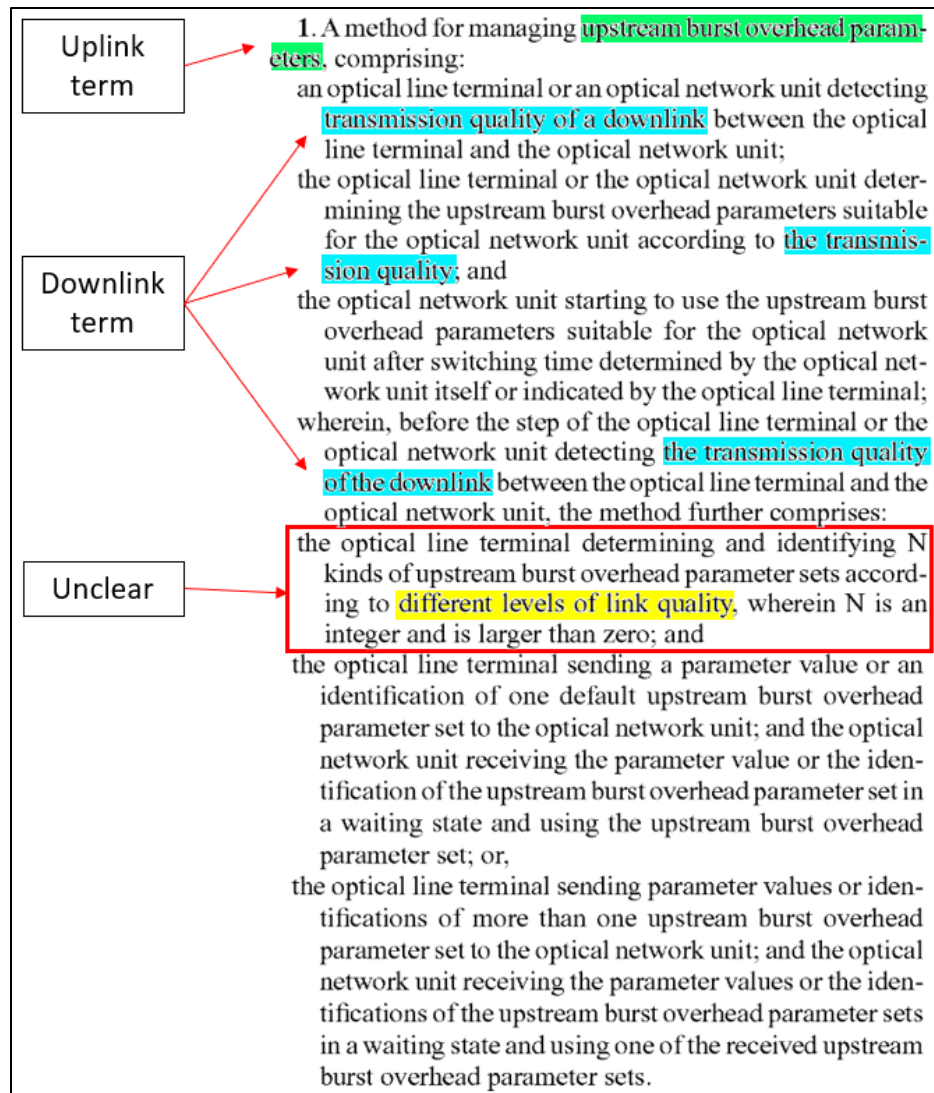
of link or direction of transmission.”). But therein lies the problem: it is unclear what the objective boundaries are for this term, especially when viewed through Plaintiff’s unbounded construction.

*i. The Intrinsic Evidence Fails to Inform a POSITA Which Interpretation Controls.*

Turning first to the claim language, the term “different levels of link quality” appears once in independent claim 1 as shown below.

<p>1. A method for managing upstream burst overhead parameters, comprising:</p> <p>...</p> <p>the optical line terminal determining and identifying N kinds of upstream burst overhead parameter sets according to different levels of link quality, wherein N is an integer and is larger than zero; and</p>
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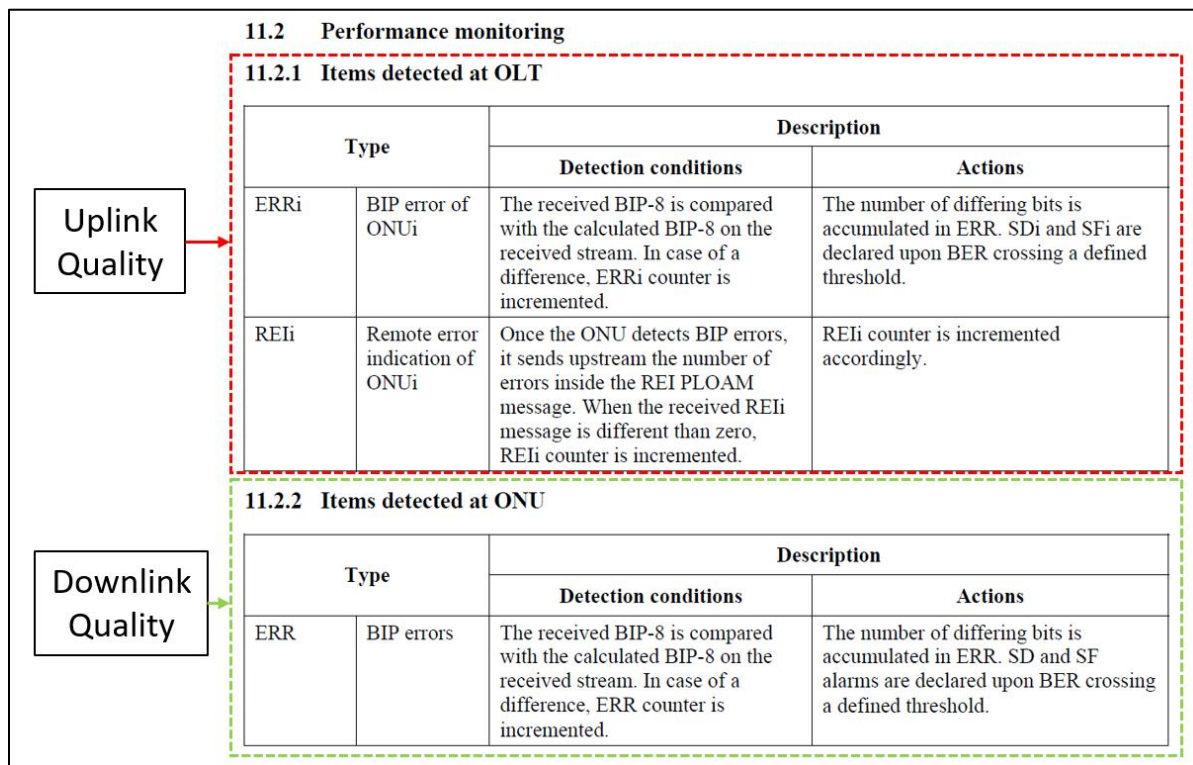
Ex. B (’359 Patent) at cl. 1 (annotated and excerpted). Looking only at the limitation in which this term appears, there is nothing that provides guidance as to which of the four possible interpretations controls. Ex. A (Brandt-Pearce Dec.), ¶¶ 91-94. Moreover, the surrounding claim language (shown below) also fails to provide any such guidance. Instead, the surrounding claim language adds further ambiguity by introducing uplink and downlink specific terms in addition to the disputed term. *Id.*



Ex. B ('359 Patent) at cl. 1 (annotated). There is ambiguity because the immediately preceding limitations include the term “transmission quality of a downlink” (shown in blue highlighting above) which tends to suggest that “different levels of link quality” (shown in yellow highlighting above) refers only to the downlink quality. But “different levels of link quality” does not recite “downlink” like the prior limitations. The phrase also lacks antecedent basis to any previous term, nor does it appear later in any dependent asserted claims. Moreover, the claimed method is for managing upstream (or uplink) burst overhead parameters (shown in green highlighting above). The claim language, therefore, references both uplink- and downlink-specific terms before

“different levels of link quality” is introduced. But the claim language does not provide guidance as to whether the disputed term covers uplink, downlink, either, or both. Ex. A (Brandt-Pearce Dec.), ¶ 93. As such, a POSITA would not know the scope of this term. *Id.*

As background, a POSITA would have understood that there is a bidirectional optical link between the OLT and each individual ONU. Ex. A (Brandt-Pearce Dec.), ¶ 96. This allows for uplink and downlink messages to be sent back and forth across the link. *Id.* Therefore, a POSITA would have understood that a generic reference to link quality does not identify whether one is referencing the uplink transmission quality, or alternatively the downlink transmission quality, which are different. *Id.* This is evident based on a review of the GPON Recommendation (G.984.3), which is cited in the background section of the ’359 Patent. For example, the GPON Recommendation specifies that performance monitoring occurs separately in the uplink (when the OLT detects performance monitors) and the downlink (when the ONU detects performance monitors). Ex. C (GPON) at 89; Ex. A (Brandt-Pearce Dec.) at ¶ 97. This is shown below.



Ex. C (GPON) at 89; Ex. A (Brandt-Pearce Dec.) at ¶ 97. A POSITA would have understood that the GPON Recommendation discloses performance monitors for determining both the uplink and downlink quality and that the GPON Recommendation fails to disclose, or even mention, how to detect a general link quality. Ex. A (Brandt-Pearce Dec.) at ¶ 98.

Plaintiff's contrary argument that Dr. Brandt-Pearce is incorrect when she states that the GPON Recommendation does not disclose how to detect a general link quality is misplaced. Dkt. 59 (Opn. Br.) at 14-15. The GPON Recommendation, like Dr. Brandt-Pearce's papers, never mentions the term "link quality." *See generally* Ex. C (GPON). Instead, the GPON Recommendation explains how to separately determine the uplink quality and the downlink quality. Ex. C (GPON) at 89; Ex. A (Brandt-Pearce Dec.) at ¶ 97.

To attempt to avoid this issue, Plaintiff argues that "different levels of link quality" is unbounded to any particular direction or type of link. Dkt. 59 (Opn. Br) at 12-13. Specifically, Plaintiff argues that the specification, at times, references link quality without identifying whether it includes the uplink quality, downlink quality, either, or both. *Id.* But this misses the point and highlights why this term is indefinite: it is subject to multiple viable interpretations and the specification fails to clarify the inherent ambiguity. *Interval Licensing*, 766 F.3d at 1371 ("[T]here is an indefiniteness problem if the claim language might mean several different things and no informed and confident choice is available among the contending definitions.") (internal quotations omitted) (citing *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 911 (2014)). Moreover, U.S. Patent No. 7,600,171, which was cited during prosecution and which Plaintiff relies upon in its Opening Brief, supports Defendants' construction because, unlike the disputed term, the '171 Patent explains that the "link quality" is measured only in the downstream direction by the ONU. For example, by adding context to Plaintiff's selected quote (shown in red below), it



is clear that the '171 Patent discloses that the ONU is actually measuring the downlink quality by measuring the bit error rate (BER) in the downstream direction and then calculating the uplink quality separately.

When the OLT does provide a FEC function, the FEC sublayer of the *ONU starts error monitoring in order to determine a link state* in Operation 806. . . . After the determination of BER, the FEC sublayer of the ONU can determine whether to use FEC. . . . According to an embodiment of the present invention, *link quality is monitored based on BER=10<sup>-9</sup>* . . . . Since a state of upstream link is usually worse than that of downstream due to the PON characteristics, *BER less than 10<sup>-9</sup> measured in the downstream link* indicates a higher BER in the upstream link.

Ex. D ('171 Patent) at 7:22-24, 7:38-40, 7:44-45, 7:49-52 (emphasis added). Tellingly, just two sentences after Plaintiff's selected quote, the '171 Patent explains that the link quality the ONU is measuring based on the BER is the "downstream link" quality. *Id.* at 7:49-52.

***ii. Plaintiff's Extrinsic Evidence Fails to Provide Clarity.***

Plaintiff cites numerous dictionary definitions on distinct terms to show that a POSITA would readily understand this disputed term. Dkt. 59 (Opn. Br.) at 13-14. But none of the dictionary definitions provide a definition for the disputed term, let alone the term "link quality." Moreover, Plaintiff's dictionary definition of "Bit Error Rate Test (BERT)" shows that the "quality of the communications path" (which Plaintiff apparently correlates to "link quality") is a directional characteristic because it is measured by dividing the "total number of received errors . . . by the total number of received data bits." Ex. E (Dictionary 1) at 62. As upstream data is received at the OLT and downstream data is received at the ONU, the "quality of the communications path" referenced in the "Dictionary of Communications" is directional and measured for either the uplink or downlink quality in a PON system. Plaintiff's argument that claim 1's generic "link quality" is agnostic of "any specific type of link or direction of transmission" is contravened by its own dictionary definition. Dkt. 59 (Opn. Br.) at 11.



Plaintiff also cites to Dr. Brandt-Pearce's papers, but again its exhibits support Defendants' construction. The cited papers highlight the difference between the quality of an optical *signal*, which is transmitted in a single direction and which can be measured by the BER, versus the quality of an optical *link*, which is bidirectional and which does not have a direct measurement.<sup>2</sup> In her paper, Dr. Brandt-Pearce discusses only the quality of an optical signal, not the quality of an optical link. Ex. F (Paper 1) at 1 ("quality of a lightpath"; "quality of the optical signal"; "quality of the light path"); Ex. G (Paper 2) at 2996-97, 3000 ("signal quality"; "quality-of-transmission"). This is an importance difference because the quality of an optical *signal* can be directly measured, whereas the quality of an optical *link* that is unbounded by direction cannot be directly measured. Tellingly, in the papers Plaintiff cites, Dr. Brandt-Pearce never refers to, or discusses, the quality of an optical link, which she explains is bidirectional. Ex. F (Paper 1) at 2 ("We consider networks with bidirectional links . . .").

**C. "the optical line terminal or the optical network terminal unit determining the upstream burst overhead parameters suitable for the optical network unit according to the transmission quality" (Claim 1)**

Plaintiff's Proposed Construction	Defendants' Proposed Construction
No construction necessary; plain and ordinary meaning	Indefinite

The disputed phrase is indefinite because it is nonsensical and requires an impossibility when read in light of the preceding claim limitations. Claim 1 includes two possible options for satisfying the claim, and one of the options requires an impossibility. Ex. A (Brandt-Pearce Dec.) at ¶¶ 100-101. For example, one option requires the ONU to *determine the parameters* suitable

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<sup>2</sup> There is no definition or discussion of the term "link quality" in the prior art GPON Recommendation (*see generally* Ex. C (GPON)) cited by the '359 Patent cited by Plaintiff in its infringement contentions.

for the ONU from a *single* parameter value or a *single* parameter set. *Id.* at ¶¶ 101-105. But a POSITA would not have understood how this is possible. *Id.* Specifically, either the ONU is forced to determine multiple parameters from just a single parameter value (a practical impossibility), or the ONU is fed the parameter set by the OLT, in which case the ONU cannot possibly “determine” which set to use.

This is confirmed by case law, which shows that when a portion of a claim—even an optional portion—is impossible, the claim is indefinite. *Cochlear Bone Anchored Sols. AB v. Oticon Med. AB*, 958 F.3d 1348, 1359 (Fed. Cir. 2020) (explaining that when a claim recites alternative elements using “and/or,” and certain of the alternatives are indefinite, “we may assume [the claim] is indefinite because it includes what is tantamount to an inkblot as an alternative way of coming within its boundaries”); *Trustees of Columbia Univ. v. Symantec Corp.*, 811 F.3d 1359, 1366-67 (Fed. Cir. 2016) (an impossible or nonsensical claim is indefinite); *Synchronoss Techs., Inc. v. Dropbox, Inc.*, 987 F.3d 1358, 1366 (Fed. Cir. 2021) (same).<sup>3</sup>

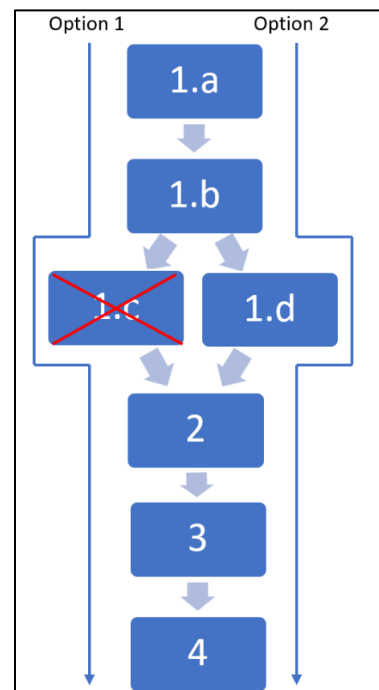
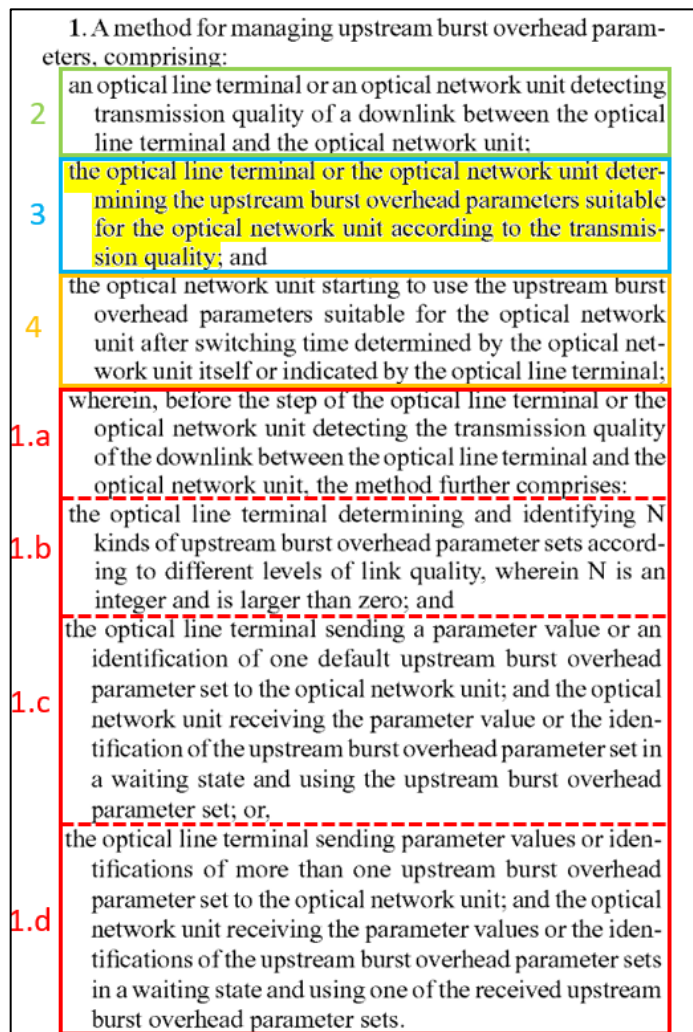
***i. The Intrinsic and Extrinsic Evidence Shows that this Phrase Requires an Impossibility.***

Turning to the claim language, the disputed phrase occurs at limitation 3 (highlighted in yellow below). A POSITA would have understood that limitation 3 (blue box below) must occur after limitation 2 (green box below) because limitation 3 requires the OLT or ONU to determine the upstream burst overhead parameters for the ONU *according to the transmission quality*. Ex. A (Brandt-Pearce Dec.) at ¶ 102. Therefore, to perform limitation 3, the transmission quality must be known, and the transmission quality is not known until after it is detected in limitation 2. *Id.*

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<sup>3</sup> District courts have similarly found claims invalid under § 112 where the claims recite an impossibility. For example, in *Michael S. Sutton Ltd. v. Nokia Corp.*, the district court granted a motion for summary judgment for invalidity under § 112 where “it would be impossible for one skilled in the art to perform the steps of claim 3.” 647 F. Supp. 2d 737, 745 (E.D. Tex. 2009), *aff’d*, 405 F. App’x 486 (Fed. Cir. 2010).

This means that limitation 3, which requires determining upstream burst overhead parameters *based on the transmission quality*, cannot occur until *after the transmission quality is detected* in limitation 2. *Id.* Moreover, as limitation 1.a makes clear, limitations 1.a-d (red box below) occur “before” limitation 2 because limitation 1.a specifically says this. *Id.*



Ex. B ('359 Patent), cl. 1 (annotated); Ex. A (Brandt-Pearce Dec.) at ¶ 102.

In addition to the specific ordering of the claim limitations, only one of limitations 1.c and 1.d is mandatory, as evidenced by the “or” which separates them. Ex. A (Brandt-Pearce Dec.) at ¶ 103. Claim 1, therefore, provides two discrete options (shown in the flow diagram on the right,

above). *Id.* Under the first option (which includes limitation 1.c), claim 1 can be characterized as follows:

- Before the OLT or ONU detects the transmission quality of a downlink (limitation 2):
  - The OLT determines and identifies one or more parameter sets according to different levels of link quality (limitations 1.a-b);
  - The OLT sends a parameter value or one parameter set to the ONU while the ONU is in a waiting state (limitation 1.c);
- The OLT or ONU detects the transmission quality of a downlink (limitation 2);
- The OLT or ONU determines the parameters (i.e., parameter set) suitable for the ONU according to the transmission quality (limitation 3).

Ex. A (Brandt-Pearce Dec.) at ¶ 103. Under this first option, claim 1 can be satisfied when the OLT sends a single parameter value or a single parameter set to the ONU, the OLT or ONU then detects the transmission quality of a downlink, and thereafter the ONU determines the parameters (i.e., parameter set) suitable for the ONU according to the transmission quality.

But a POSITA would not have understood how an ONU can determine the parameters suitable for the ONU when the ONU only has a single parameter value or set available from which to make the determination. *Id.* at ¶ 104. First, when only one parameter value is sent to the ONU, it is impossible to determine suitable parameters from one parameter value. *Id.* Second, when a single parameter set is sent to the ONU, it is also impossible to determine suitable parameters from one parameter set. *Id.* This is because the ONU must use the set (there is no determination to make). This is confirmed by dictionary definitions of “determine” (shown below), which a POSITA would have understood meant “to decide.” *Id.*

- *Determine*, THE AMERICAN HERITAGE COLLEGE DICTIONARY (3d ed. 1993) (“**to decide** or settle (a dispute, for example) conclusively and authoritatively”). *See* Ex. H (Dictionary 2).
- *Determine*, WEBSTER’S II NEW COLLEGE DICTIONARY (1995) (“**to decide** or settle (e.g., a dispute) authoritatively and conclusively”). *See* Ex. I (Dictionary 3).
- *Determine*, THE AMERICAN HERITAGE DICTIONARY (1991) (“**to decide** or settle (a dispute, for example) conclusively and authoritatively”). *See* Ex. J (Dictionary 4).
- *Determine*, MERRIAM-WEBSTER’S COLLEGIATE DICTIONARY (11th ed. 2003) (“**to settle or decide** by choice of alternatives or possibilities”). *See* Ex. K (Dictionary 5).

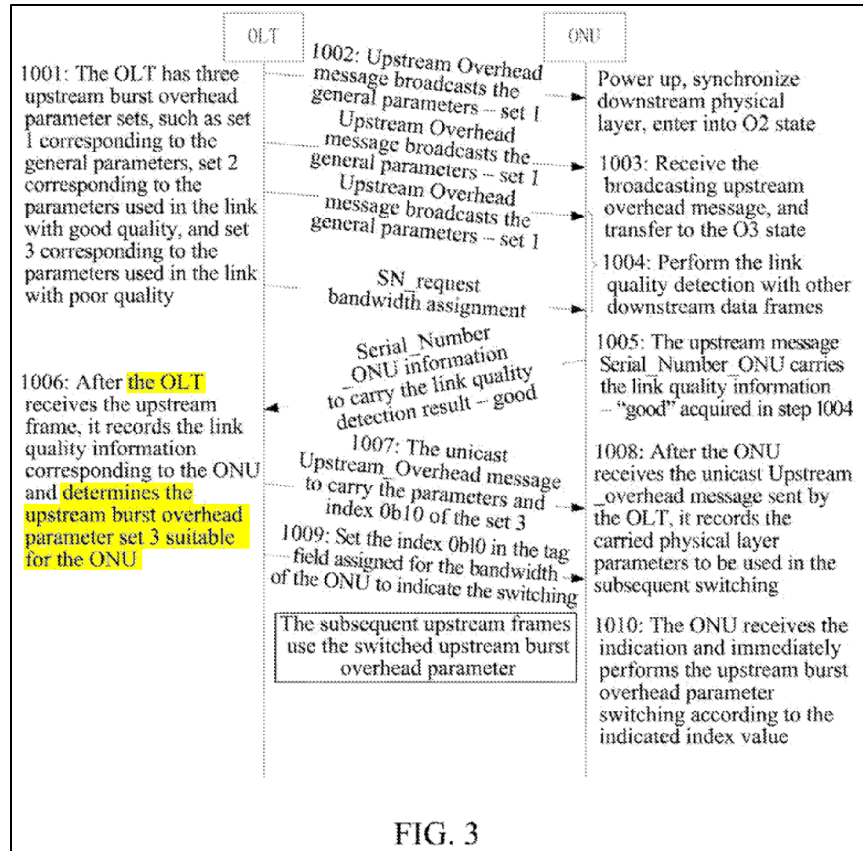
A POSITA, therefore, would not have understood how the ONU could determine suitable parameters for itself from a single parameter value or set. Ex. A (Brandt-Pearce Dec.) at ¶ 105.

***ii. Plaintiff’s Arguments Fail to Overcome the Inherent Impossibility in the Claim Language.***

Plaintiff argues that (1) the disputed phrase is well understood by POSITAs, (2) that Defendants’ understanding of “determine” is incorrect, (3) that Defendants misinterpret the claim language, and (4) that Defendants’ legal theory is unsound. Each of Plaintiff’s arguments is factually or legally incorrect and is addressed in turn below.

***a. The ’359 Patent Shows that the Disputed Phrase was not Well Understood by POSITAs.***

Plaintiff’s only support for its contention that the phrase was well understood by POSITAs is a citation to Figure 3 and its own expert’s discussion of Figure 3 (which Plaintiff says maps to the first option discussed above). Dkt. 59 (Opn. Br.) at 15-16. But Figure 3 does not illuminate how the ONU can determine the suitable parameters when the ONU only has a single parameter value or set to choose from. This impossibility is highlighted in Figure 3 at step 1006, where it shows that the OLT determines the suitable parameters, ***not the ONU***.



Ex. B ('359 Patent) at Fig. 3 (annotated). This makes logical sense because, prior to step 1006, the ONU only has a single parameter set (set 1), and it would have been nonsensical for the ONU to determine the suitable parameters from set 1 because the ONU must use the parameters in set 1 (they are the only parameters it has). Simply put, there is no determination that the ONU can make under the first option as explicitly shown in Figure 3. Tellingly, there is no Figure in the '359 Patent that depicts an ONU determining suitable parameters for itself from a single parameter value or set. And Plaintiff's Opening Brief and its Expert's Report fail to explain, let alone discuss, how the ONU can determine suitable parameters from a single parameter value or set. Their silence speaks volumes.

***b. The Plain and Ordinary Meaning of “Determine” Supports Defendants’ Construction.***

Plaintiff argues that “determine” could also mean “establish” or “ascertain” or “settle.” Dkt. 59 (Opn. Br.) at 17. That is of no moment: this claim construction does not turn on whether “determine” means “decide” or “establish.” Instead, as each of the definitions that Plaintiff and Defendants cite shows (and as also shown by the GPON Recommendation referenced by Plaintiff and Plaintiff’s arithmetic analogy), “determine” requires some affirmative intellectual act. Here, claim 1 can be satisfied when the ONU determines suitable parameters for itself from a single parameter value or set. This is impossible because the ONU cannot determine suitable parameters for itself according to the transmission quality when it only has a single parameter value or a single parameter set from which to make that “determination.” This is because there is no selection, decision, or determination to be made. The Federal Circuit agrees, finding that “determine” does not cover the situation where there is “only a single action” that can be taken because there is “nothing to determine.” *Tech. Patents LLC v. T-Mobile UK, Ltd.*, 700 F.3d 482, 500 (Fed. Cir. 2012).

***c. The Number of Possible Parameter sets from which to Select is Irrelevant to the Indefiniteness issue.***

Plaintiff argues that claim 1 is not limited to one parameter value or set of parameters. Defendants do not disagree. Dkt. 59 (Opn. Br.) at 17-18. But the breadth of claim 1 covers the impossible situation where there is only a single parameter value or a single set of parameters from which the ONU must “determine” suitable parameters based on the transmission quality. The case law is clear that the entirety of the claim scope, including optional limitations, must be definite. *See, e.g., Cochlear*, 958 F.3d at 1359 (explaining that when a claim recites alternative elements using “and/or,” and certain of the alternatives are indefinite, “we may assume [the claim] is indefinite because it includes what is tantamount to an inkblot as an alternative way of coming



within its boundaries”). Plaintiff’s argument, therefore, that the claim is definite because there could be a situation (based on unclaimed steps) where there are multiple parameter sets from which the ONU can determine suitable parameters misses the point. Patentee did not claim only the situation where there are multiple parameter sets to choose from, and Plaintiff must live with the full breadth of its claim, which includes impossible situations that render it indefinite.

For the same reason, Plaintiff’s case law argument—that “comprising” claims like claim 1 may contain additional limitations that are not actually claimed—also misses the point. For example, *Smith & Nephew*, which Plaintiff cites, states only that “comprising” claims can be practiced when the allegedly infringing method practices each step, in addition to other steps. *Smith & Nephew, Inc. v. Ethicon, Inc.*, 276 F.3d 1304, 1311 (Fed. Cir. 2001). But *Smith & Nephew* says nothing about the issue here, let alone anything about definiteness. And *S3* is distinguishable. *S3 Inc. v. nVidia Corp.*, 259 F.3d 1364 (Fed. Cir. 2001). There, the Federal Circuit found that “a claim is not ‘indefinite’ simply because it is hard to understand when viewed without benefit of the specification,” where the specification specifically explained a missing limitation that was inherent in the claim. *Id.* at 1369. But here, unlike in *S3*, there is no inherent limitation “missing” from the claims. Nor is there any explanation in the specification that overcomes the impossibility in the claimed method.

Plaintiff’s other argument, that the OLT in limitation 1.b could determine and identify more than one parameter set, fails for the same reasons. First, the claim scope includes where the OLT only identifies one parameter set. Ex. B (’359 Patent) at cl. 1 (“the [OLT] determining and identifying *N* kinds of . . . parameter sets . . . where *N* is an integer and is larger than zero”) (emphasis added). Second, limitation 1.b does not claim that the parameter set(s) the OLT identifies are sent to the ONU. Therefore, even if the OLT determines and identifies more than



one parameter set, the claimed method does not require that these parameter sets are then sent to the ONU. Instead, as depicted in annotated claim 1 above, the claim language includes the impossible situation where the ONU must determine suitable parameters when it only has a single parameter value or set from which to make that determination.

***d. Plaintiff's Case Law is Inapposite with the Issue Herein and Conflicts with Controlling Precedent.***

Plaintiff relies on two cases, *Kroekel* and *Maxwell*, to argue that Defendants' legal analysis is unsound, "[e]ven if all of Defendants' arguments were factually accurate." Dkt. 59 (Opn. Br.) at 19. But Defendants' factual arguments are sound, and those cases are incongruous with this issue.

Before presenting its case law, Plaintiff initially attempts to undercut Defendants' analysis of the claims, arguing in passing that Defendants "manufactured" the impossibility. *Id.* Defendants, however, did not manufacture the impossibility; instead, the patentee created the impossibility by drafting a broad claim with optional limitations that allowed for an impossible situation that is clearly covered within the claim scope. Tellingly, Plaintiff never argues that claim 1 does not cover the situation where an ONU must determine suitable parameters from a single parameter value or set. Instead, Plaintiff's only defense, repeated throughout its Opening Brief, is that there are some situations that are possible. But this cannot save an impossible claim.

*Kroekel*, a 50-year-old case from the Court of Customs and Patent Appeals, was decided under different patent laws and before the landmark Supreme Court decision in *Nautilus* clarified the standard for indefiniteness. *Nautilus*, 572 U.S. at 901. Its relevance is, therefore, limited at best. *Kroekel* also dealt with subject matter that is drastically different than that at issue in the '359 Patent. For example, the court in *Kroekel* had to analyze whether a composition of matter, which was claimed based on its percentage by weight of different compounds, was definite—not whether

a method of optimizing the burst overhead parameters in a PON system was possible. *In re Kroekel*, 504 F.2d 1143, 1144 (CCPA 1974).

Moreover, the holding in *Kroekel* is not analogous to the present situation. In *Kroekel*, the court held a claim was definite because “[s]ubject matter which cannot exist in fact can neither anticipate nor infringe in law,” and a POSITA could readily determine whether a real-world composition fell within the claim scope. *Id.* at 1146. The court, therefore, concluded that the claim was definite because there could never be a real-world scenario where it was unclear whether the composition fell within the claim scope because the composition could not exist if it was not within the claim scope. That is not the case here. There is no dispute that the claimed subject matter exists. The dispute is whether the subject matter could perform the claimed feature.

*Maxwell*, likewise, is not applicable as it relates to a contradiction, rather than an impossibility. *Maxell, Ltd. v. Amperex Tech. Ltd.*, 94 F.4th 1369, 1370 (Fed. Cir. 2024). The claim in *Maxwell* included one limitation with a Markush group that required one of three optional elements (Co, Ni, or Mn) and a later limitation that required one of the elements (Co). *Id.* at 1371. The Federal Circuit held the claim was definite because “there is no contradiction in the claim language” as “[i]t is perfectly possible for a transition metal element to meet both requirements.” *Id.* at 1373. Unlike *Maxwell*, the claim at issue here does not contain an alleged contradiction between distinct claim elements. Instead, it contains alternative methods for satisfying the claim—one of which is impossible. As such, *Maxwell* (and *Kroekel*) fail to illuminate whether an optional method that is impossible to perform is indefinite. Moreover, Plaintiff’s legal interpretation, which analogizes cases incongruous with the present issue, runs directly afoul of the Federal Circuit’s holding in *Cochlear*, which is directly analogous to the present issue. *Cochlear*, 958 F.3d at 1359 (explaining that when a claim recites alternative elements using “and/or,” and certain of the

alternatives are indefinite, “we may assume [the claim] is indefinite because it includes what is tantamount to an inkblot as an alternative way of coming within its boundaries”).

#### **IV. CONCLUSION**

For the foregoing reasons, Defendants respectfully request that the Court adopt their proposed claim constructions.

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Respectfully submitted,

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**CERTIFICATE OF SERVICE**

I hereby certify that the foregoing document was served electronically on February 11, 2025, on all counsel who have consented to electronic service.

/s/ Ross Barton  
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